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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,531	12/05/2003	Yaping Zhou	SC12717TK	1912

23125 7590 05/27/2005

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EXAMINER
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MAI, ANH T

ART UNIT	PAPER NUMBER
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2832

DATE MAILED: 05/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/729,531	<b>Applicant(s)</b> ZHOU ET AL.	
	<b>Examiner</b> Anh T. Mai	<b>Art Unit</b> 2832	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☐ Responsive to communication(s) filed on \_\_\_\_.

2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 1-28 is/are pending in the application.

    4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1-7, 10, 14, 15, 18-20, 23, 26 and 28 is/are rejected.

7) ☒ Claim(s) 8, 9, 11-13, 16, 17, 21, 22, 24, 25 and 27 is/are objected to.

8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All    b) ☐ Some \*    c) ☐ None of:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12/5/03</u> .	6) <input type="checkbox"/> Other: ____.

U.S. Patent and Trademark Office  
PTOL-326 (Rev. 1-04)

**Office Action Summary**

Part of Paper No./Mail Date 052505

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 14-15, 18-20, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olschewski [4103267] in view of Cheon [6194774].

Olschewski discloses a toroidal ferrite core 18 coupled to a substrate 10 and conductive coil surrounding the core; the coil comprising segments formed from a first plurality of bond wires 24 and a second plurality of bond wires 12 extending between the core and the substrate [see figure 1].

Olschewski discloses the invention as claimed as cited above except for each of the first plurality of bond wires coupled two of plurality of wire bond pads, and second bond wires extending over the core and coupled between two of the wire bond pads. Cheon discloses the bond pads 122, 124, 126 [figures 1-2].

The pairs of pads 122, 124, 126 and 128 are formed on the semiconductor substrate 110 at predetermined intervals. Each of the pairs of pads 122, 124, 126 and 128 includes two pads formed on the semiconductor substrate 110 spaced apart a predetermined distance. Conventional methods, which are well known in semiconductor processing and integrated circuit manufacture, can form a patterned metal layer that includes bonding pad pairs 122, 124, 126 and 128, metal lines 142, 144 and 146, and any other bonding pads or conductive interconnects required in an integrated circuit including the inductor. Typically, the patterned metal layer is on an insulating layer such as an oxide or nitride layer which for the purpose of this document is part of the

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substrate. Vias through the insulating layer can connect an inductor to other circuitry which may be formed in and on the substrate.

Each pair of pads has an corresponding bonding wire connected between the pads constituting the pair, and metal lines on the substrate connect a pad from each pair of pads to a pad in the next pair so that the pairs of pads, the metal lines, and the bonding wires form a current path.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use bond pads as taught by Cheon to Olschewski. The motivation would have been to provide the inductor high quality factor [col 2; lns 52-55]. Therefore, it would have been obvious to combine Cheon with Olschewski.

With respect to claims 2, 4; Olschewski discloses the ferrite core in toroidal shape [abstract].

With respect to claim 3; Cheon and Olschewski do not disclose the core being cylindrical in shape. The configuration of core shapes was a matter of choice which a person of ordinary skill in the art would have found obvious to facilitate the structure. MPEP 2144.04 *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)

With respect to claims 5-7; Cheon discloses the uses of silicon substrate [col 1, ln 16] and semiconductor substrate [col 3; ln 1]. In addition, the silicon substrate is conductive material therefore, the substrate could be a lead frame.

With respect to claims 14-15; the claimed device obviously can be functioned as a transformer/inductor.

With respect to claims 18-20, 23; the claims are method counterpart of structure claims 1-2,4-6.

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3. Claims 10, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olschewski in view of Cheon as applied to claim 1 above, and further in view of Shield et al. [3614554].

Olschewski and Cheon disclose the invention as claimed except for the conductive material selected from a group consisting of gold, copper and aluminum. Shield discloses the conductively metals of aluminum and other alternate material such as gold.

Other high conductivity metals such as tungsten and gold could alternatively be utilized in place of aluminum to form metal strips 14a-h.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the conductive material as taught by Shield to Olschewski in view of Cheon. The motivation would have been to provide high conductivity of the material. Therefore, it would have been obvious to combine Shield with Olschewski in view of Cheon.

4. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olschewski in view of Cheon as applied to claim 1 above, and further in view of Mas [4524342].

Olschewski and Cheon disclose the invention as claimed except for the insulated wire. Mas discloses the insulated wire in the toroidal core device [figure 1].

In embodiments where coils 18 are composed of conventional layers of many turns of insulated wire, the potential difference between successive layers would be relatively higher.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use insulated wire as taught by Mas to Olschewski in view of Cheon. The motivation would have been to provide insulation between the winding turns. Therefore, it would have been obvious to combine Mas with Olschewski in view of Cheon.

*Allowable Subject Matter*

5. Claims 8-9, 11-13, 16-17, 21-22, 24-25, 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 8, 24 recite inter alia, *the core is coupled to the substrate using epoxy, the first plurality of bond wires extending through the epoxy.*

Claims 9, 25 recite inter alia, *a stand off for supporting the core a predetermined distance above a surface.*

Claims 11, 21 recite inter alia, *metal shield positioned between at least a portion of the inductive device and the substrate.*

Claims 16, 27 recite inter alia, *the substrate is part of an integrated circuit die, the core being located over the die.*

The references of record do not teach or suggest the aforementioned limitation, nor would it be obvious to modify those references to include such limitation.

*Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 form.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh T. Mai whose telephone number is 571-272-1995. The examiner can normally be reached on 5/4/9 Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on 571-272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**ANH MAI  
PRIMARY EXAMINER**